SFA Usability Guidelines

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0. General Document Note

Most of the usability guidelines in this document are general, high level guidelines. If designers and developers need specific guidelines or direction on how to apply web user interface design principles, then more specific guidelines are needed. See the attached appendix pages at the end for a more detailed usability guidelines.

1. Overview of Usability Guidelines

1.1 Usability Definition

Usability is one of the components of system acceptability (the extent to which a system meets the needs of users and system stakeholders). It applies to all aspects of a system with which a human might interact. While it is always an important quality requirement, it is especially important and demands increased attention for web applications.

Good "usability" is about designing tools so that they make sense to people who use them.

The focus of users is on the experience of using the site, not on the means by which that experience is delivered.

1.2 Usability Objectives

The usability objectives defined here would help SFA content developers/web designers focus on aspects of the design that are most crucial for the ultimate success of the Intranet and portal applications. However, there are numerous potential usability objectives to consider. To identify which are most applicable in any given situation, the designer must first analyze a number of inputs to the design process, including "Business Objectives" for the web application, an "Audience Analysis" of target users, and a "Task Analysis" of those tasks likely to be performed by the target users. In practice, designers will also begin to get an idea of the priority of usability objectives at this stage.

2. Proposed Usability Objectives

The following are usability objectives that SFA content developers/web designers should incorporate in their design of SFA intranet and portal applications:

2.1 Speed

2.1.1 Definition

Speed (or throughput) refers to the efficiency of the site from a user perspective; how easily and quickly the user can perform tasks on the site. The objective is defined by the number of steps (pages, controls, keystrokes) the user has to go through to reach their goal, and fewer is better.

As in many web applications the client is very thin, the number of pages the user has to go through is critical - the time to download each page and the associated graphics is often the biggest obstacle to high speed use.

2.1.2 Speed/Throughput Metrics

Speed is best measured by the time (i.e. minutes), or effort (i.e. mouse clicks, keystrokes, etc.) it takes to complete a task, perform an action, etc., within an application. An example of Speed/Throughput metric could be the following

"90% of SFA employees will be able to load SFA Home Page in less than 1 minute."

2.1.3 Techniques to increase Speed/Throughput

It is important to minimize the number of screens required to complete the task. This means putting more information and controls into each page, as well as client-side input control mechanisms. It is recommended to offer experienced users short-cuts where possible.

This should be balanced, however, with not overloading a page with functions or control elements. Speed or throughput can also be achieved by providing users with a clear method for computing tasks, often enhanced by grouping related functions on pages.

Reusing known user data to pre-fill fields or shorten dialogs could make the site more user-friendly.

2.2 Response Time

2.2.1 Definition

Response time from a systems perspective is the amount of time the system spends processing and transferring data. From a user perspective, response time begins when they click a control and ends when the resultant page is completely finished loading. Only at this point can the user continue with the transaction. Alternatively, response time can indicate the time to complete a particular task.

The "ideal" response time when people use technology is around one second. Users will not notice any delay at all when the response time is less than 0.4 seconds. If the screen is refreshed too quickly (although this is rarely a problem), it's possible the user won't notice that a change happened. The problem, of course, lies at the other end of the spectrum. If systems take more than ten seconds to respond, users can lose attention; this makes it difficult for them to return to what they were doing.

Response times of 10 seconds or less have been accepted as the industry standard for internet sites (although this is far too long in intranet/portals environments). It is important to remember that ten seconds for users that have LAN connections to T1 lines is literally minutes to those who have to dial up, even with a 56K baud modem. Also, keep in mind that ten seconds is an arbitrary number; for some applications more or less will be acceptable.

2.2.2 Response Time Metrics

Response time is best measured by determining how long it takes for an application to respond to a specific input or action from the user. The following are examples of Response Time metrics:

- "The home page will not take more than 10 seconds to download using a standard modem connection."
- "The response time between pages will never exceed 5 seconds."

2.2.3 Techniques to increase Page Download Time

- Multimedia content and frames take time to load, and should be minimized to best meet this objective.

- Design to make sure that key information is displayed first when a page downloads, so users have something to interpret while the slower elements download. (i.e. the use of interlaced graphics)
- Using tables and basic HTML formatting tools whenever possible is likely to make the response times shorter.

2.3 Learnability

2.3.1 Learnability Metrics

Learnability is how easily novice (first-time and very infrequent) users can learn and perform a task on a web application. Tasks can be complicated transactions or simply navigating through a site and reading some information. Minimizing the learning curve will reduce training and support needs during initial stages. SFA web sites have to be designed intuitively so that first time users can navigate through the sites with relative ease

2.3.2 Learnability Metrics

Learnability is not as easy to measure as other more explicit usability objectives. Metrics for learnability revolve around determining the extent to which novice or infrequent users are able to discern how to perform specific tasks within an application, or use an application in general. The following metric should be kept in mind when designing sites:

"90% of users looking for specific information will find it on the first attempt."

2.3.3 Techniques to increase Learnability

- Use horizontal navigation: this is useful where users will need to follow specific steps in a predefined order to accomplish a task. This can reduce confusion because there are fewer decisions needed.
- Think about mental model: a clear, strong match with the mental model the user has about the task will support learnability.
- Keep site simple by reducing the amount of information the user must deal with, which can also help users finish tasks easily.

- Be descriptive: detailed descriptions and explanations can make new concepts easier to learn. Try to keep descriptions and explanations as clear and simple as possible. Be consistent across a site and application in the use of descriptions, explanations, and foloing naming conventions.
- Reduce number of fields and possible actions per page: minimizing the amount of information or action on each page will decrease the frequency of errors; users are less likely to make mistakes when there is less to do.

2.4 Memorability

2.4.1 Definition

Memorability refers to the ability to return to a site after a while and remember:

- where to find things and
- how to navigate through it.

Remembering commands, navigation and structure of the site (i.e. under what menu item was that piece of information?) will help users re-apply the knowledge they acquired while using the site during previous times. This will empower more frequent and expert usage of the site.

For SFA web applications, the designer must make the site memorable by providing such design elements as an easy to follow navigation scheme and prevalent search engine.

2.4.2 Memorability metrics

Memorability is typically more difficult to measure than some of the other usability objectives, because, by definition, it involves determining the extent to which users are able to remember how to use an application, perform tasks, navigate through a site, etc., from one use or visit to the next. An important aspect of this metric is the amount of time that passes between the initial and subsequent visits.

The following memorability metric should be used in designing SFA web applications:

99% of the users will not have to spend time learning how to navigate the site after their first visit"

2.4.3 Techniques to increase Memorability

- Be consistent with other related applications and sites. This will reinforce memorability. Internal consistency (e.g. back always returns to the previous page) will also support this objective.
- Use a clear mental model of the structure of the site, mapping task structure whenever possible. This will make the site memorable.
- Use meaningful navigation tools: icons and mnemonics that relate well to the command users execute will help them remember how to navigate. When properly used these will function as 'landmarks' to the user.

2.5 Error Prevention

2.5.1 Definition

Error prevention is the functionality designed into applications that protects users from making errors or mistakes. There are several kinds of error prevention such as:

- Confirmation - notifying the user that their operation completed successfully.
- Format Checking - a simple check that the information entered is at least in the correct format.
- Deactivation - certain functions when they are unnecessary or variable, preventing the user from using them and avoiding an error message.

2.5.2 Error Prevention Metrics

Error Prevention can be assessed by the extent to which users are able to successfully perform tasks, navigate through an application, and otherwise generally use the application in the way intended, without making mistakes

SFA content developers and web designers should have the following goal in mind :

"Tasks will be completed by the SFA users with 95% accuracy".

2.5.3 Techniques to prevent errors

- An "undo" function is the biggest single help in preventing errors, allowing the user to go back one or more steps in the task. However, the user must be notified if "undo" is not available at any point during the task.
- A tab should be used to tell the user where they currently are, what is being done and what has been done so far.
- Textual explanations of controls can help the user get through the task correctly the first time.
- Confirmation/preventive windows can stop the user at points where critical errors may occur, prompting the user for "are you sure?", “Yes” or “No”.
- Restricting options at certain times prevents the user from choosing things that can only cause errors in the user's current situation.

2.6 Subjective Satisfaction

2.6.1 Defintion

Subjective satisfaction is the user's overall feeling about the site. This is essentially based on how the site affects the user. Question the user will ask are:

- Is it aesthetically pleasing?
- Does it look good?
- Is it efficient?
- Does the user feel in control?
- Is it easy to use?

There is a strong link between this objective and the others. Prioritizing other objectives appropriately for the types of users (or tasks) will increase subjective satisfaction. It can also be increased by using intuitive icons and field names in the case of novice users, or improving response time when users have a considerable workload. These are only two examples; opportunities for increasing (and decreasing) users' subjective satisfaction exist in nearly every choice made about the site.

2.6.2 Subjective Satisfaction Metrics

A standardized questionnaire for evaluating user satisfaction (SUMI) is a simple and effective measurement tool. It quantifies people's responses to a set of questions which have been shown to be relevant to the things being measured. The responses of hundreds (or thousands) of other people to those same questions are stored in a standardization database. Comparing these with the responses from our sample of users can give us statistically valid measures of subjective satisfaction. SUMI delivers measures of five orthogonal dimensions of subjective satisfaction: attractiveness, control, efficiency, helpfulness and learnability. However, the best indicator of subjective satisfaction is whether users return to use the site, having other options available to them.

2.6.3 Techniques to increase Subjective Satisfaction

- There is no substitute for trying out design ideas early on groups of target users: getting them to walk through things they want to do using the system and assessing their views via focus session, observation, interview and questionnaire, or formal usability testing.
- Use of graphics, frames, color, media and other things that make the site interesting and good-looking will often work, but it is crucial to be aware of users' bandwidth constraints. If your user base is home Internet users, some of them use 28.8 modems to see your site. One of the fastest ways to make users dissatisfied with your site is to have poor response time

2.7 Efficiency of Navigation

2.7.1 Definition

'Efficiency of navigation' means that the user will NOT be required to follow a specific path. In fact, the tool will provide him/her with many possibilities for altering that path for informational sites where there is not a prescribed sequence of activities required to complete a task. For example, a user that is in the middle of a certain dialog will be able to suspend that dialog, open another one and return to the original one. Traditionally, when interactions were designed for client/server applications (or 3270 screens), there was choice made between flexibility and rigidity. SFA site developers could choose to design an application that would give maximum control to the user, allowing them to choose the flow of the navigation. This could lead to the development of expert skills (shortcuts, etc.).On the other hand, SFA designers could also decide to create more rigid interactions, which are more appropriate for the novice user, restricting navigation to a clearly defined (and correct) path. The application would control the navigation and the users would only be responsible for the pace of the interaction.

2.7.2 Efficiency of Navigation Metrics

Measuring Efficiency of Navigation involves determining the degree to which users can quickly, accurately, and effectively navigate within a site or application, as well as between sites. SFA content developers/web designers should abide by the following principle:

"Users will not be forced to complete any of the options they selected".

2.7.3 Techniques to increase Efficiency of Navigation

- To support the Efficiency of Navigation objective it is important to fully understand the tasks the SFA users will face in the context of their needs. Observe and interview the potential users; they are the ones that can describe the different needs they have. This will help identify which are the most frequent requirements of navigation.
- Vertical navigation would allow dialogs to be split into smaller pieces, giving more control to the user.
- Multiple browsers can be opened to allow the user to access multiple parts of the application and quickly switch between them without losing information.
- Frames should be used in the same way as multiple browsers (although more screen "real estate" will be necessary to present the same amount of information). With frames, all the information will exist in the same browser window. (Frames caution: See Style Guide)

2.8 Consistency

2.8.1 Definition

It's easy to say that consistent designs are better than inconsistent ones; however, there are many folds to consistency, including internal consistency, mental map (or mental model consistency), and external consistency.

Internal consistency is what is generally meant by "consistency", but it is in fact, only one aspect. Internal consistency refers to the product maintaining its "look and feel" characteristics in all pages of the site. The "back" button on some sites is a good example; many times it is some type of arrow pointing left. Consistency in this case means that the button should always be the same size, shape, location, and especially function ("back" means the last page seen by the user, not the one the site designers thought was previous). On pages where "back" is not an option (the first page of the site or perhaps in a dialog), the button is replaced with the word "quit" in a graphic that is the same size and in the same location.

Mental Map, or Mental Model consistency is also very important. The application should benefit from the user's real-life experiences. An icon showing an open palm facing the user will probably be seen as "STOP". Using metaphors, colors, icons and even words consistently with what they mean to the users is a very powerful design strategy. Again, must consider the audience and any international meanings associated with icons.

External consistency means the product should look and behave like the other sites or applications the users have used. For example, underlined text on the Internet is a the convention for hypertext links. If designers use underlining as a way of remarking important words (and these words are not hypertext links), most users will click on those words and become frustrated when receiving no feedback.

Consistency is a very powerful strategy that can increase the learnability, memorability and subjective satisfaction of a design. However, it is crucial to maintain consistency in all aspects of design in order to get the greatest benefit.

2.8.2 Consistency Metrics

Consistency is best assessed by determining the degree to which an application employs the same standards, conventions, and "look and feel" between pages, adopts widely-accepted or universal standards common to external applications, and employs conventions, approaches and mental models generally understood by the user population.

The following are **sample** consistency metrics that SFA content developer/web designers should keep in mind:

- "SFA logo will always appear in the upper right hand corner of the top frame of the page"
- "The navigation bar will always be resident at the bottom of every page except the home page"
- "Hypertext links will always appear underlined in blue font" ***Example only! Do not want to restrict design***

2.8.3 Techniques to increase Consistency

- Use of standards and shells. When defining standards it is important to consider not only a consistent appearance of the SFA web pages, but also that actions (controls and navigation) must behave consistently.
- Use of CAR (Condition-Action-Response) diagrams. This was traditionally done for client/server applications. CAR diagrams are very useful for comparing different areas of the application, since they provide a uniform way of describing the behavior of the controls in the design. For SFA web applications , CAR diagrams should document the results of clicking hyperlinks, using widgets, and any other interface elements on the page that perform an action

2.9 Security

2.9.1 Definition

This objective refers to ensuring that users trust the site; when they do, they won't be apprehensive about performing transactions. This makes the site more valuable, since users will be comfortable doing things like making purchases and submitting confidential information.

Security is one of the greatest hurdles to overcome in the design of intranet and portal solutions. Portals can further complicate security issues by enabling users outside the enterprise to use the application. Although this is a great strength of Netcentric application and a point of differentiation from Client/Server systems, it comes at the cost of increased security complexity and a possibly less secure system. The following are some of the reasons for a high focus on security for intranet and portals environments:

- Multiple variety of vendor platforms and versions
- Diverse user demographics
- Modern software/network intruders are prepared and organized.

2.9.2 Security Metrics

Metrics for security are best tested by questioning users on their comfort level with using an application, especially concerning tasks involving sensitive or personal information (i.e. student loan information). The following are examples of security metrics:

- 85% of visitors to the site will feel comfortable registering their names and Internet addresses in order to get a free product information material.
- All users will be given the opportunity to enter a secure site when transmitting sensitive information such as student social security numbers.

2.9.3 Security Techniques

- Implementing security for a Web site is mainly an architecture task. Using secured servers, choosing encryption schemes, and selecting the level of security are tasks that don't affect the interface. There are two main security architecture areas involved in an intranet/portal application: secure communication and secure environment.
- The user needs to understand that the security is in place and is reliable; this is what creates the necessary trust. Displaying informational windows when entering and exiting secured areas makes a big difference, as well as giving the user the option to enter secure areas before asking for sensitive information.

Appendix A – UID Guidelines

Overall Design

- Web Site Organization & Structure
- Site Cohesiveness
- Consistency & Design Conventions

Site Navigation

- Overall Navigation

  (e.g. Ensure that the overall navigational scheme conveys the relatedness of content, information or functionality of the site in a way that gives the user a mental model of the organization of the site.)

- Text Links

  (e.g. Associate the link to the titles on the page or section to which it links.)

- Image Maps & Graphic Links

  (e.g. Clearly delineate the clickable regions on an image map. Reinforce through the use of mouse-over descriptions.)

Page Layout & Design

- Home Page/Top Level

  (e.g. Clearly convey the intended purpose and audience of the site through the home page design.)

- Page Identification, Titles & Banner Graphics

  (e.g. Provide concise meaningful titles for web pages (no more than 5-6 words, <65 characters) using the <TITLE> tag in the <HEAD> section.)

- Font/Legibility

  (e.g. Use emphasis sparingly in the text. Reserve the use of bold for main headings or section headings.)

- Color, Background, & Texture

    (e.g. Use color consistently, especially where it conveys meaning.)

- Organization of Information/Web Content & Text

    (e.g. Provide logical and meaningful arrangement of information and graphics and consistency of design and organization of information across pages.)

Graphics

- Provide descriptive text for all substantive graphics using the ALT attribute of the <IMG> tag.
- Avoid excessive use of graphics
- Use the <IMG> tag attributes WIDTH and HEIGHT to improve image loading.

Multimedia and Animation

- Motion, animation and scrolling text

    (e.g. Limit the use of elements that grab a user's attention by movement and blinking.)

- Use of Video

    (e.g. Need to consider download times affected by large file sizes.)

Transactive Web Site Design Elements & Controls

- Field labels

    (e.g. Create clear and succinct field and table labels.)

- Group Boxes/Tables

    (e.g. Use group boxes or tables to logically relate and group fields that are related to one another.

- Push/Command Buttons

    (e.g. Recommend no more than 6 per dialog box or functional group.)

Proprietary Messages

- Include a proprietary message (and copyright , where appropriate) to each page.

Accessibility

- If there are informative or important graphics, scripts or applets built into pages, provide text descriptions.

Other Design Considerations

Search Engines/Design Strategies